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| 10/749,466 | 12/31/2003 | Atul N. Hatakar | INTEL25 | 3980 |
| 6980 | 7590 | 05/16/2006 | EXAMINER | |
| TROUTMAN SANDERS LLP 600 PEACHTREE STREET, NE ATLANTA, GA 30308 | | | THOMAS, SHANE M | |
| | | | ART UNIT | PAPER NUMBER |
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DATE MAILED: 05/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/749,466

Applicant(s)

HATALKAR ET AL.

Examiner

Shane M. Thomas

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 and 25-29 is/are rejected.
- 7) ☒ Claim(s) 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This Office action is responsive to the application filed 12/31/2006. Claims 1-29 are presented for examination and are currently pending.

In the response to this Office action, the Examiner politely requests that support be shown for language added to any original claims on amendment and any new claims. That is, indicate support for newly added claim language by specifically pointing to page(s) and line numbers in the specification and/or drawing figure(s). This will assist the Examiner in prosecuting this application.

Specification

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

Claims 4,6-9,12,16,22, and 26, objected to because of the following informalities:

As per claim 4, the term --the memory devices-- should be amended to --the at least two memory devices-- as the former term has not been previously defined in the claims.

As per claim 6, the term --the desired locations-- should be amended to --the desired location-- or, more coherently, to --desired locations-- (removing the --the), as the term --the desired locations-- has not been previously defined in the claims.

As per claim 12, the term --the current location-- should be amended to --a current location-- as the former term has not been previously defined in the claims.

As claim 16, the phrase --said XIP application usage data-- should be amended to --said XIP application usage data-- as the former phrase has not been previously defined in the claims.

As per claim 22, the phrase --said relocating the XIP applications to particular flash memories in accordance with said desired location-- should be amended to --said relocating the XIP applications between the at least two flash memories in accordance with said desired location-- as the former term has not been previously defined in the claims.

As per claim 26, the term --said predetermined criteria-- should be amended to --said at least one predetermined criteria-- as the former term has not been previously defined in the claims.

Claims 7-9 are objected to as being dependent on objected to claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim 9, it is not clear whether --said list-- is referring to (1) the list of XIP applications having a desired location in internal flash memory or (2) the list comprising the list

Art Unit: 2186

(as defined in claim 8) as the term --said list-- lacks proper antecedent basis. The Examiner recommends amending claim 9 and removing the phrase --a list of-- so the claims would read: "...said list comprises XIP applications ...". Nonetheless, for the purposes of examination, the Examiner has considered --said list-- to be the list that comprises the XIP applications.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-19, 21-23, and 25-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Hatakar (U.S. Patent Application Publication No. 2004/0088701).

The applied reference has a common Assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As per claim 1, Hatakar teaches **an XIP tracker 116 (figure 1) to track usage of XIP applications (318) executing from one (320, figure 3) of at least two memories (320 and 316)**

Art Unit: 2186

and generate XIP usage data (§22), an XIP analyzer (§23) to analyze the XIP usage data in accordance with at least one predetermined criteria (i.e. number of times application was utilized or the duration it was used - §22) **and determine a desired location of said XIP applications** (analyzer may determine that an XIP application should become a non-XIP application (§24), which requires removing the XIP application from the memory 320 and moving it to memory 316 (§33) - i.e. the desired location would be the location the XIP application would be stored in the memory 316), and an **XIP application relocater to relocate the XIP applications between the at least two memory devices in accordance with the desired location** (§24 and 33-34, which teaches swapping XIP applications to and from the memories 316 and 310 based on whether the application should be executed as an XIP application).

As per claim 2, Hatakar teaches the memories 316 and 320 can both be flash memories in §26. The Examiner is considering the flash memory 320 as being an internal flash memory since Hatakar notes that memory 320 is primary memory which executes programs for the processor 310 (§26) and that memory 316 may be a slower, external-type memory that is usually in the art located further away from the processor. For example, the memory 316, while in this embodiment is being considered to be a flash as taught in §26, may also be a disk drive or removable storage - memory devices that are well known to be external or lower in the memory hierarchy from a primary memory.

As per claims 3 and 15, Hatakar teaches the **XIP tracker monitoring the usage of the XIP applications** (i.e. the non-XIP applications that the XIP tracker monitors are being considered by the Examiner to in fact be XIP applications as the non-XIP applications can be

Art Unit: 2186

swapped to the internal memory 320 and become XIP applications - ¶24) **in the at least two memory devices to generate XIP usage data (¶23) and store the XIP usage data in an XIP usage table (application usage storage 114 - ¶22).**

As per claim 4, **the XIP usage table is stored in one of the memory devices (¶30).**

As per claims 5 and 16, **the XIP tracker is adapted to update the XIP usage data as the XIP applications are used (¶23).**

As per claim 6, **the XIP analyzer generates a list of the desired locations (i.e. either remaining as an XIP application or non-XIP application where the desired location is the same as the current location or swapping an XIP application to be a non-XIP application and vice-versa where the desired location for the XIP application is the external flash 316 or the internal flash 320, respectively) as discussed in ¶¶24 and 33-34.**

As per claims 7 and 17, **the XIP analyzer orders the XIP usage data table in accordance with the predetermined criteria to for the list of the desired locations of the XIP applications.** This is seen with respect to ¶23, which teaches that an ordered list of the most frequently used applications is created based on the predetermined criteria and that these applications are deemed to be XIP applications (and therefore their desired location is the internal flash memory 320 - ¶34), while the applications that are not used as frequently in the list are deemed to be non-XIP applications (and therefore stored in the external flash memory 316 - ¶34).

As per claims 8 and 18, **the list comprises a list of XIP applications (as discussed directly above and with respect to ¶23) having a desired location in the internal flash memory (as these applications are the ones that are deemed most frequently used and needed to be stored**

Art Unit: 2186

in internal flash 320 in order to be executed directly from memory - ¶¶23-24). In other words, the most frequently used XIP applications are listed (¶23), whose desired location is the internal flash memory 320 - ¶24 and ¶34.

As per claim 9, the **list 212 can be stored in flash memory (¶30).**

As per claims 10 and 19, **the predetermined criteria comprises frequency of usage of the XIP applications** (i.e. number of times the application was utilized) and **duration of usage of the XIP applications** - (¶22).

As per claims 11, 21, and 26, Hatakar teaches that the **predetermined criteria is updatable (¶¶23-24).**

As per claim 12, **the XIP relocater compares the desired location** (i.e. the internal flash 320) **to the current location** (i.e. the external flash 316) **of the XIP applications to determine whether to relocate the XIP applications.** This can be seen in ¶24, where if a frequently used XIP application is stored as a non-XIP application in external flash 316, it is relocated to internal flash 320 to make it a XIP application (¶34). Likewise, if one of the XIP applications in the internal flash is not one of the frequently used XIP applications, it is relocated to the external flash.

As per claims 13 and 23, Hatakar teaches the **XIP relocater updates an XIP location table after relocation of the XIP applications** (figure 5, step 420) - ¶33.

As per claims 14, 25, and 29, the rejections follow the rejection for claim 1 above.

Hatakar teaches the memories 316 and 320 can both be flash memories in ¶26. The Examiner is considering the flash memory 320 as being an internal flash memory since Hatakar notes that memory 320 is primary memory which executes programs for the processor 310 (¶26) and that memory 316 may be a slower, external-type memory that is usually in the art located further away from the processor. For example, the memory 316, while in this embodiment is being considered to be a flash as taught in ¶26, may also be a disk drive or removable storage - memory devices that are well known to be external or lower in the memory hierarchy from a primary memory.

As per claim 22, the rejection of the limitation **“wherein said relocating the XIP applications to particular flash memories in accordance with said desired location, comprises generating a list of current XIP applications”** is taught in the discussion of claim 6, supra. The limitation **“comparing said list of current XIP application locations with the desired locations of the XIP applications to determine whether the XIP applications should be relocated”** is taught in the discussion of claim 12, supra.

As per claim 27, the rejection follows the rejection for claims 6 and 12, above. Hatakar teaches **generating a list of current XIP application locations** (as the applications may be either stored in either the external flash 316 or the internal flash 320 - ¶¶33-34) **and comparing said list currently XIP application locations with the desired location of the XIP applications** (based on the criteria as discussed in ¶¶22-24) **to determine whether the XIP applications should be relocated** (¶24).

As per claim 28, Hatakar shows in figure 3 a **processor 310, an internal flash memory 320 coupled to the processor to store XIP applications 318, and an external flash memory 316 coupled to the processor to store XIP applications** (i.e. the external flash stores actually stores non-XIP applications, but since those applications may become XIP applications, they are being considered by the Examiner to be XIP applications - ¶24). Hatakar teaches the memories 316 and 320 can both be flash memories in ¶26. The Examiner is considering the flash memory 320 as being an internal flash memory since Hatakar notes that memory 320 is primary memory which executes programs for the processor 310 (¶26) and that memory 316 may be a slower, external-type memory that is usually in the art located further away from the processor. For example, the memory 316, while in this embodiment is being considered to be a flash as taught in ¶26, may also be a disk drive or removable storage - memory devices that are well known to be external or lower in the memory hierarchy from a primary memory. Finally, Hatakar teaches **an XIP application manager** (figure 1, elements 112 and 116) **coupled to the internal flash memory 320 and the external flash memory 316 to track usage of the XIP applications and relocate the XIP applications in accordance with said usage between the internal flash memory 320 and the external flash memory 316** - ¶¶21-24.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatakar (U.S. Patent Application Publication No. 2004/0088701).

As per claim 20 Hatakar does not specifically teach **wherein at least one predetermined criteria comprises the size of the XIP applications**. Hatakar does teach that size can be a constraint issue when storing the list 212 when the memory 320 that stores XIP applications is small in ¶34. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the predetermined criteria of Hatakar to have taken into account the size of the XIP applications when determining which applications to relocate between the external 316 and internal flash 320 memories, as the amount of memory available to execute XIP application may be quite small in some embodiments as discussed in ¶34.

Allowable Subject Matter

Claim 24 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not specifically teach all of the claimed limitations of claim 24.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ginsberk (U.S. Patent No. 6,574,747) teaches a virtual addressing table to execute XIP applications across multiple regions of memory.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shane M Thomas whose telephone number is (571) 272-4188. The examiner can normally be reached M-F 8:30 - 5:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt M Kim can be reached at (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2186

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shane M. Thomas



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